Value in Motion:

Driving forward data-driven decision making

A framework to help organizations pivot the use of data from predicting and planning to “sensing and responding” to fuel innovation

CGI

Using your best guess, what proportion of data-driven executive decision-making in your enterprise is focused on reducing errors and what proportion on identifying value-creating innovations?

1. Rethinking insights

In today's reality, where change is accelerating, digital leaders recognize the need to sense and respond to change quickly, and to design their business and operating models to be agile. It is no longer enough to be the most efficient organization with the least errors; you also need to be the most innovative and fast at creating value through that innovation.

Most digital transformation programs have been in progress for many years. Yet, the 2021 CGI Voice of Our Clients reveals that only 20% of executives interviewed are achieving expected results from their investment in digital transformation. Given the importance of digital in today's society, how can organizations become digital leaders?

The answer is to strategically manage your organization's digital value chain. Digital leaders intently design, manage and evolve their value chains to achieve the following:

- Instill cultural change, including evolving technology from a support function to being core to the business
- Organize customer- and citizen-centric business models and the enabling architecture in tandem on an ongoing basis
- Prioritize cybersecurity and data privacy, along with sustainability actions
- Pivot the use of data from predicting and planning to sensing and responding

This paper focuses on how digital leaders pivot to a state of sensing and responding.

Innovative decision-making for "sensing and responding"

The CGI Voice of Our Clients also reveals that globally, 75% of organizations cite advanced analytics/reporting as the top innovation investment in the next three years. Even with advancements in analytics, artificial intelligence (AI) and reporting technologies, gaining trustworthy insights for strategic innovations is still a small fraction of the progress in the value large enterprises derive from advanced analytics today.

As Albert Einstein famously said: "We cannot solve our problems with the same thinking we used when we created them." To win and be sustainable in this environment, organizations need to visualize and simulate decisions, enabled by dynamic data and insights. This is what we term "value in motion."

Furthermore, to remain competitive and relevant, organizations need to continually sense the environment (data and insights) and be prepared to respond fast (decisions and actions). This is what we call the "sense and respond" instinct.

To fuel innovation, organizations need to pivot the use of data from predicting and planning to "sensing and responding."

Innovation "sense and respond" includes spotting new revenue-generating opportunities, identifying a business pivot, service improvements, or an acquisition candidate. Drawing inspiration from cognitive psychologist Gary Klein's "Triple Path Model of Insights," we believe gaining innovation insights requires:

- **Connection insights**—insights gained by combining information that was previously unconnected
- **Contradiction insights**—insights from spotting an inconsistency and wanting to make it better
- **Creative desperation insights**—insights from needing to overcome an impasse where nothing else has worked and an unorthodox line of play is required

How can enterprises ensure that insights and enterprise decision-making enable these new paths? More importantly, how can they enable data-driven decision-making and fast actions based on those reliable insights?

This requires enterprises to rethink the mechanics of decision-making in the organization and the enabling technologies. We share the three components of the value in motion framework in table 1.

Table 1. Value in motion framework

	To enable
1. Start with the decision-making environment	Connection and contradiction insights
2. Accelerate the data-insights-decisions adaptive wheel	Operationalization of the sense and respond instinct
3. Visualize and simulate decisions	Connection, contradiction and creative desperation insights

2. Starting with the decision-making environment

Lead with the decisions

Collaborating across the digital value chain intensifies the importance of making complex decisions quickly and with full transparency. It perhaps comes as no surprise that in the 2021 Voice of Our Clients, advanced analytics is the second top-cited business as well as IT priority for executives we spoke with.

However, over the past few decades, there has been a lot of focus on building the technology and algorithms for converting data into insights, but much less on applying those insights to make business decisions.

The application of decision science using "decision intelligence" (figure 1) is key to scaling the application of machine learning and AI to solve business problems and augment critical business decisions.

Businesses and governments need "decision scientists" who understand the anatomy of business decision-making. Starting with the critical decisions (and action scenarios, or choices) and working back to what insights you need, and then the data you need to gain those insights, is key to truly generating actionable insights for decision-makers. This focused approach is core to ensuring high-quality data (i.e., data that is fit for purpose, accurate, complete and timely).

Leading with decisions and decision science also involves looking beyond decisions in silos to looking at decisions across the value chain and how they impact each other. This process includes resolving the aspects of governance, accountability, organization structure, decision rights, delegated authorities, privacy and security.

Figure 1. Decision intelligence

Decision intelligence is an emerging field where data science and analytics are combined with social and decision science to scale the application of machine learning in complex problem-solving.

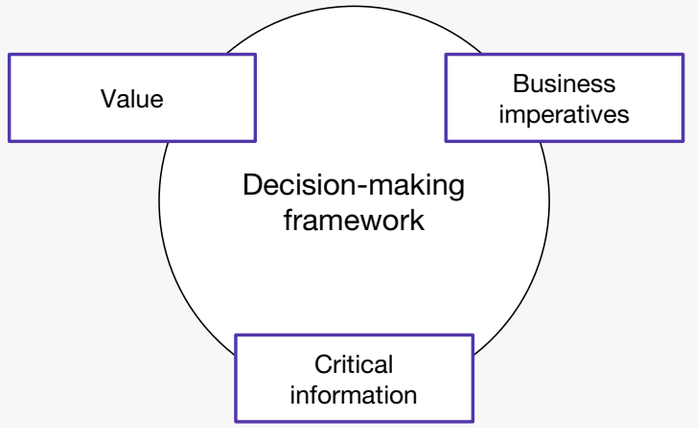
Adopt a decision-making framework

Decisions must be linked to enterprise value. The top strategic decisions will vary by role and function across the organization; however, they must be based on a common understanding of value and the organization's key business imperatives. Not every enterprise has an aligned set of business imperatives that is tracked and measured uniformly, making it difficult to take critical decisions.

To support the decisions operating model, enterprises must adopt a common framework that links value to business imperatives to critical information. This will form the common basis of decision-making across the organization—the single source of truth.

- **Value** encompasses financial, sustainability and growth aspects and the measures for each.
- **Business imperatives** are the prioritized capabilities—the top 40-50 for large enterprises—that are required for achieving the organization's ambition.
- **Critical information** is defined as the data to be identified and prioritized to ensure it is of high quality i.e., fit for purpose, accurate, complete and timely.

Figure 2. Decision-making framework



3. Accelerating the data-decisions-insights adaptive wheel

Once the strategic decisions are identified, the next step is to continually operate the data-decisions-insights cycle, adding new decisions and data and deriving new insights as required. A critical part of this cycle is a feedback loop to track and measure if the decision science-modeled, insight-driven decisions and actions actually produce the expected value or if the decision-making process needs to be adjusted.

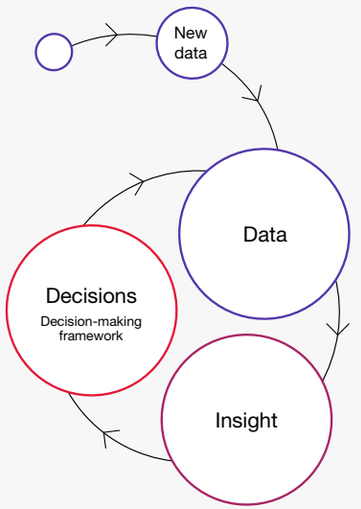
We call this the adaptive wheel (figure 3), and it is the essence of a well-oiled “sense and respond” organization.

Accelerating and continually operating and optimizing this loop requires three critical technology-enabled capabilities.

1. Getting the data elements right

- Engineer and manage the data (acquiring, modeling, processing and implementing data stores) using data from various sources including IoT devices
- Architect the right data management platform and storage architecture
- Operationalize the data (DataOps and CloudOps)
- Protect the data; for example, using identity and access management
- Establish the foundational elements from data competencies, processes, organization, data governance, literacy and culture

Figure 3. Adaptive wheel



2. Engineering the insights

Decision and data scientists collaborate with engineers to deliver the right reliable insights required for the prioritized business decisions. This includes modeling and classifying value-based decisions, identifying the required insights, acquiring the required data, and generating insights by creating the right machine learning models. It also includes accessing training data, removing biases, etc. Engineering and science teams can collaboratively build secure platforms and operate those models securely (ScienceOps, DataOps and CloudOps if the data is in the cloud).

3. Augmenting, automating or autonomizing human decision-making

As organizations transition toward a “sense and respond” reflex, speed is of the essence; humans cannot compete with machines when it comes to computing and processing information. Although many decisions, especially complex ones, require human collaboration, cognitive context understanding, creativity and ingenuity, not all of them need a human in-the-loop. For example, adjudicating simple auto insurance claims is a task that can be automated without human collaboration. On the other hand, determining the best timing and pricing for an IPO requires complex decision-making, and therefore, it is beneficial to have humans in-the-loop.

Ethical AI and decision-making

Artificial Intelligence (AI) is foundational to creating innovations as well as improving efficiencies. It will become a bedrock for decision-making in future-ready organizations. Therefore, it is imperative that AI be designed to uphold ethics, include a code of conduct and focus on human-centered design related to enterprise decision-making.

Organizations embarking on the AI journey must have:

- **Guiding principles** or an AI Code of Conduct to ensure responsibility for the inputs, processes and outcomes delivered
- **Modern risk analysis** to overcome the constraints of traditional risk analysis methods that can no longer handle the ever-increasing volumes of data, especially in volatile regulatory environments.
- **Mitigation techniques** including methodological, technical and strategic tools that ensure the principles of ethical AI are upheld by mitigating the risks identified.

4. Visualizing and simulating decisions

To truly exploit digital technologies to create value and minimize enterprise risks, you need to visualize your entire enterprise digitally and simulate decisions before acting on them in the real world.

Digital twins for physical assets are becoming common—from airplane engines to remote manufacturing plants, windmills and cars. Cities like Singapore and Shanghai have digital replicas to help monitor city infrastructure and predict and simulate crisis scenarios. Digital twins for Earth systems are also being developed as part of the Destination Earth (DestinE) initiative by the European Commission "to monitor and predict environmental change and human impact to support sustainable development."*

Now, we are beginning to see the development of organizational twins—the digital mirrors of enterprises. With the increase in automation and digital data, companies can soon visualize how their organization works, collaborates and innovates, as well as the speed at which it moves. We predict that all enterprises will eventually have an organizational twin that models how they really work and, more importantly, can simulate how they respond to change over time.

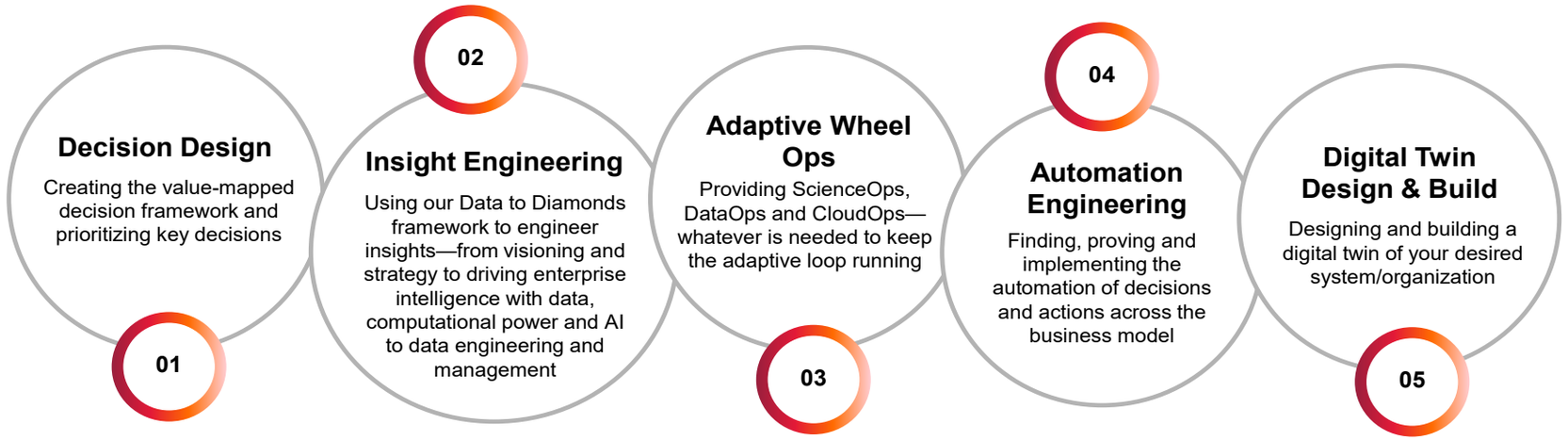
An organizational digital twin is the personification of value in motion.

*Destination Earth, 19 March 2021, digital-strategy.ec.europa.eu/en/library/destination-earth

5. Helping clients achieve value in motion

With a human-centered view, we are committed to helping our clients unlock true enterprise-wide value by applying technologies, methods and decision science to achieve value in motion through insights they can act on. As a trusted partner to clients across industries and geographies, we enable decision-makers to see the big picture, make more fact-based decisions and adopt a “sense and respond” stance that is required in today’s dynamic market.

Along with our approach, we bring the following expertise to help our clients make better business decisions.



5500+

members delivering data and analytics solutions for our clients

Value in motion

approach that includes decisions, data, ethical AI and analytics adoption frameworks

150+

client cases where we have successfully delivered data and analytics services and solutions

About CGI

Insights you can act on

Founded in 1976, CGI is among the largest IT and business consulting services firms in the world. We are insights-driven and outcomes-based to help accelerate returns on your investments. Across 21 industry sectors in 400 locations worldwide, our 78,000 professionals provide comprehensive, scalable and sustainable IT and business consulting services that are informed globally and delivered locally.

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